2003 Maryland Wild Turkey Observation Survey Summary

The Maryland Department of Natural Resources (DNR) conducts 2 annual wild turkey observation surveys, often referred to as "brood surveys." The primary purpose of these surveys is to estimate wild turkey reproductive success throughout the state. Additional information can also be obtained from the surveys regarding recent range expansions and relative densities of turkeys in the western region. Like most game birds, turkey populations are largely dependent on reproduction from year to year. Adult survival is generally low, and in order for a population to persist, many young turkeys must be recruited into the population each year. However reproductive success, or productivity, is highly variable and depends on many factors such as weather conditions during nesting and brood-rearing periods, the physical condition of nesting hens, and predator populations.

Statewide Survey

Survey Methodology.- A statewide turkey observation survey has been conducted in Maryland since 1993. Within the DNR, survey forms are given to all Wildlife and Heritage Service field staff, as well as interested State Forests and Parks, Natural Resource Police, and Forestry personnel. Additionally, survey forms are distributed to interested hunters, landowners, and citizens. The survey period is June 1 through September 15 and participants are asked to record the number of hens, poults, and gobblers seen with a brief description of the location. This survey is most useful to estimate reproduction, but provides little information on turkey densities because the number of participants varies considerably from year to year. While county-specific reproductive estimates may be more useful, many counties lack an adequate number of observations, making the results unreliable. Therefore, results are summarized by Physiographic Regions, areas of the state that share similar forest types, topography, weather conditions, and demographics.

Results.- Turkey productivity, as indexed by the number of poults seen per adult hen, was lower in 2003 than in any previous year since the survey was initiated (Table 1). An index of 1.5 poults per hen was observed in both the Appalachian Plateau and the Coastal Plain Regions of the state, well below the long-term average of 3.2 and 3.4 poults per hen, respectively. The Blue Ridge (1.0) and Piedmont Region (1.2) indices were even lower. The Ridge and Valley Region of the state, encompassing Allegany and Washington counties, showed the highest productivity, but was still below average with an index of 3.1 poults per hen.

It appears that the variation in reproduction among regions was largely due to nesting success, and, to a lesser extent, poult survival. The number of poults per brood hen (a hen with poults) was relatively constant among 4 of the 5 regions, ranging from 3.6 to 4.7 (Table 2). However, poults were not seen with many hens in some regions; the percent of the hens with a brood was only 25% in the Piedmont and 41% in the Appalachian Plateau and Coastal Plain. In contrast, over 70% of the hens had a brood in the Ridge and Valley region, where the best reproduction was noted.

The lack of early nest success in most of the state is also evident looking at results by month (Table 3). In June only 21.7% of hens had broods and a poult per hen ratio of 0.9 was noted. Significantly more hens with broods and poults were seen during July and August, suggesting that late-hatched nests and renests fared better than early nests. Research has shown that extended periods of rain during nesting may be more detrimental that during the brood-

rearing period. This "wet-hen" theory is based on the fact that rain-soaked hens sitting on nests are easier for mammalian predators, like foxes and raccoons, to locate by smell. While they typically can not catch and kill the hen, they will readily destroy or eat the eggs. This may have been a factor this year, as rains persisted throughout the nesting period statewide. In addition to lost nests, persistent rains probably met any poults that did hatch successfully. Rains and colder than normal weather can limit their ability to maintain body temperature and make feeding difficult in the wet vegetation. Anecdotal reports of very young poults late in the year (August and September) further suggest that early nesting efforts may have been nearly a complete failure.

Western Region Survey

Survey Methodology.- A similar, but more intensive survey is conducted in the western counties of Garrett, Allegany, and Washington. The purpose of this survey is to estimate productivity and also determine the density of turkeys in the region where fall turkey hunting is permitted. Knowledge regarding reproduction is important, but it does not provide information on the actual number of turkeys present. This survey was initiated in 1996 and participants record the same data as the statewide survey, but also record the number of miles traveled per month. To further control the accuracy and consistency of the data, only turkeys seen and the number of miles driven while "on duty" are recorded. With knowledge of the number of miles driven, we can estimate the relative density of turkeys in the region and detect changes over a given time period. A selected group of observers participate in the survey, mostly comprised of Wildlife and Heritage Service field staff and Natural Resource Police.

Results.- Productivity in the Western Region was below average in 2003 (Table 4). A productivity index of 2.36 poults per hen was observed, which was near to the record low of 2.23. Only 0.45 broods were sighted per 1,000 miles, the lowest ever recorded on the survey. Poor early nesting was likely a factor, as only 15% of hens seen in June had a brood (Table 5). This figure rose significantly through August when 97% of hens were seen with broods. The data suggest that Washington and Allegany experienced better reproductive conditions than did Garrett county.

The number of turkeys seen per 1,000 miles driven was the lowest on record at 5.72. This was an 52% drop from the 2002 survey and could be due to several factors. First, there were few poults produced and secondly, the severe winter of 2002-03 may have had an impact on adult survival in the western mountains. Additionally, reports suggest that many fields where broods are often seen were not cut until late in the year due to wet spring conditions, possibly making turkeys more difficult to see this year. Although the drop is alarming, turkey populations can rebound quickly with good productivity. For example, in 2000, only 5.9 turkeys were seen per 1,000 miles, but after a good nesting season in 2001, the number jumped to 10.0.

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STATEWIDE TURKEY OBSERVATION SURVEY RESULTS, 2003

Table 1. Wild turkey production estimates (poults per hen) by physiographic region, 1993-2003.

Physiographic Region[1]	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	*2003*	Previous 5-year Average	Long-term Average
Appalachian Plateau	2.4	5.8	3.8	2.1	3.4	3.7	4.2	1.7	4.0	2.8	*1.5*	3.3	3.2
Ridge and Valley	4.8	6.1	3.9	2.6	2.8	2.9	3.8	3.5	5.6	4.9	*3.1*	4.1	4.0
Blue Ridge[2]	4.1	7.0	No Data	2.7	No Data	2.5	3.1	1.3	5.0	6.6	*1.0*	3.7	3.7
Piedmont[2]	2.2	2.5	3.4	4.0	2.6	2.4	2.5	3.3	2.4	3.1	*1.2*	2.7	2.7
Coastal Plain	4.9	7.3	4.7	3.1	3.7	2.6	2.2	2.2	3.3	1.7	*1.5*	2.4	3.4

[1] Physiographic Regions are defined as:
Appalachian Plateau – Garrett
Ridge and Valley - Allegany, Washington
Blue Ridge - Frederick west of Rt. 15
Piedmont - Baltimore, Carroll, Cecil, Frederick east of Rt. 15, Harford, Howard, Montgomery
Coastal Plain - Anne Arundel, Calvert, Caroline, Charles, Dorchester, Kent, Prince Georges, Queen Annes, St. Mary's, Somerset, Talbot, Wicomico, Worcester

[2] Estimates typically derived from small sample, caution should be used when interpreting results

Table 2. 2003 wild turkey observation survey results by physiographic region.

Physiographic Region	No. of Observations	Hens	Poults	Gobblers	Unknown	Total	% Brood Hens[1]	Poults per Hen	Poults per Brood Hen	Poults per Brood
Appalachian Plateau	28	34	51	15	15	115	41.2	1.5	3.6	5.1
Ridge and Valley	53	67	206	26	6	305	70.1	3.1	4.4	8.6
Blue Ridge	5	6	6	2	0	14	50.0	1.0	2.0	3.0
Piedmont	11	12	14	5	2	33	25.0	1.2	4.7	4.7
Coastal plain	379	559	845	365	173	1941	41.1	1.5	3.7	6.5

[1] Brood hen = A hen with poults

Table 3. 2003 wild turkey observation survey results by month.

Month	No. of Observations	Hens	Poults	Gobblers	Unknown	Total	% Brood Hens	Poults per Hen	Poults per Brood Hen	Poults per Brood
June	177	230	210	193	72	705	21.7	0.9	4.2	6.0
July	128	148	282	101	46	576	49.3	1.9	3.9	5.8
August	110	208	455	84	45	792	61.5	2.2	3.6	7.7
September	61	92	175	35	33	335	50.0	1.9	3.8	6.5
All months	476	678	1122	413	196	2408	43.8	1.7	3.8	6.6

WESTERN REGION TURKEY OBSERVATION SURVEY RESULTS, 2003

Table 4. Western region wild turkey observation survey results, 1996-2003.

	1996	1997	1998	1999	2000	2001	2002	*2003*	Previous 5-year Average	Long-term Average
No. of Observers	13	15	15	17	17	17	14	*13*	16	15
No. of Broods	45	51	43	75	42	50	44	*26*	51	47
No. of Hens	166	174	125	178	119	120	187	*85*	146	144
No. of Poults	383	443	365	658	265	567	425	*201*	456	413
No. of Turkeys	708	709	494	1015	512	844	768	*332*	727	673
No. Miles Driven	75995	81595	73019	91410	86821	84170	65587	*58002*	80201	77075
Poults per Brood	8.51	8.69	8.49	8.77	6.31	11.34	9.66	*7.73*	8.91	8.69
Poults per Hen	2.31	2.55	2.76	3.70	2.23	4.72	2.27	*2.36*	3.14	2.86
Broods per Observer	3.46	3.40	2.33	4.41	2.47	2.94	3.14	*2.08*	3.06	3.03
Broods per 1,000 Miles Driven	0.59	0.63	0.48	0.82	0.48	0.59	0.67	*0.45*	0.61	0.59
Turkeys per Observer	54.46	47.27	32.93	59.71	30.11	49.65	54.86	*26.56*	45.45	44.44
Turkeys per 1,000 Miles Driven	9.32	8.69	6.77	11.10	5.90	10.03	11.71	*5.72*	9.10	8.65

Table 5. 2003 western region wild turkey observation survey results by month.

Month	No. of Observers	Poults per Hen	Poults per Brood Hen[1]	Poults per Brood	% Brood Hens	Broods per 1,000 miles	Broods per Observer	Turkeys per 1,000 miles	Turkeys per Observer
June	15	0.90	6.00	6.00	15.0	0.15	0.20	2.62	3.5
July	13	1.70	3.00	4.88	56.5	0.41	0.62	3.92	5.9
August	12	3.87	4.00	8.92	96.7	0.98	1.08	12.01	13.3
Sept	10	2.33	3.11	14.00	75.0	0.41	0.20	8.82	4.3
All Months	12.5	2.36	3.72	7.73	63.5	0.45	2.08	5.72	26.6

[1] Brood Hen = A hen with poults